

CLAIMS

1. A method of performing power save operation in a wireless local area network (WLAN) by a mobile station, a recurring service period schedule set up between the mobile station and an access point including regularly scheduled
5 service periods for a reserved traffic stream, the reserved traffic stream identified by a reserved traffic stream identifier, the mobile station having a WLAN subsystem that is initially in a low power mode, the method comprising:
 - powering up the WLAN subsystem of the mobile station;
 - commencing a scheduled service period;
 - 10 receiving from the access point at the end of a scheduled service period an indication that the access point has more reserved data of a reserved traffic stream in a buffer of the access point at an end of the scheduled service period;
 - placing the WLAN subsystem into low power mode at the end of the scheduled service period
 - 15 commencing an unscheduled service period to retrieve the remaining data buffered at the access point for the mobile station, comprising:
 - powering up the WLAN subsystem;
 - transmitting a polling frame to the access point, the polling frame including the reserved traffic stream identifier;
 - 20 receiving at least one response frame form the access point in response to transmitting the polling frame; and
 - placing the WLAN subsystem into low power mode after receiving the at least one response frame.

2. A method of performing power save operation as defined in claim 1, wherein receiving at least one response frame comprises receiving at least one aggregate response frame.

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3. A method of performing power save operation as defined by claim 2, wherein receiving the aggregate response frame is received in response to transmitting the polling frame with an aggregate bit set.

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4. A method of performing power save operation as defined by claim 1, further comprising receiving an acknowledgement frame at the mobile station from the access point over the WLAN channel in response to transmitting the polling frame.

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5. A method of performing power save operation as defined by claim 1, further comprising transmitting an acknowledgement frame from the mobile station to the access point over the WLAN channel in response to receiving the at least one response frame.

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6. A method of performing power save operation as defined by claim 2, wherein:

receiving the at least one aggregate response frame includes receiving a header of a first frame of the aggregate response having a MORE_DATA bit set to indicate a second response frame will be transmitted subsequently;

the method further comprising receiving a second response frame at the mobile station.

7. A method of performing power save operation as defined by claim 1,
5 wherein transmitting the polling frame comprises transmitting a null frame.

8. A method of performing power save operation as defined by claim 1,
further comprising acquiring the WLAN channel after waking up the WLAN
subsystem, performed by contending for the WLAN channel.
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9. A method of performing power save operation as defined by claim 8,
wherein contending for the WLAN channel is performed by carrier sensing.

10. A method of retrieving data from an access point by a mobile station in a wireless local area network (WLAN), the reserved data corresponding to a reserved traffic stream and identified by a reserved traffic stream identifier, the method comprising:

- 5 performing a scheduled transaction between the mobile station and access point during a scheduled service period, the mobile station transitioning from a low power WLAN mode to an active WLAN mode to commence the scheduled transaction, and then transitioning from the active WLAN mode to a low power WLAN mode upon completion the scheduled transaction; and
- 10 performing an unscheduled transaction between the mobile station and access point during an unscheduled service period, the mobile station transitioning from a low power WLAN mode to an active WLAN mode to initiate the unscheduled transaction, and then transitioning from the active WLAN mode to a low power WLAN mode upon completing the unscheduled transaction;

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11. A method of retrieving reserved data from an access point by a mobile station as defined in claim 10, wherein performing the scheduled transaction comprises indicating at the end of the scheduled transaction that the access point has buffered data for the mobile station that could not be delivered
- 20 within the scheduled service period; and performing the unscheduled transaction is performed in response to receiving the indication from the access point that the access point has buffered data for the mobile station that could not be delivered within the scheduled service period.

12. A method of retrieving reserved data from an access point by a mobile station as defined in claim 11, wherein the buffered data that could not be delivered during the scheduled service period is reserved data that belongs to a reserved traffic stream.

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13. A method of retrieving reserved data from an access point by a mobile station as defined in claim 12, wherein the reserved data that could not be delivered during the scheduled service period is voice data, and wherein the reserved traffic stream is part of a live voice call.

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14. A method of retrieving reserved data from an access point by a mobile station as defined in claim 10, further comprising checking a battery status of the mobile station before performing the unscheduled transaction, and commencing performing the scheduled only if the battery status .